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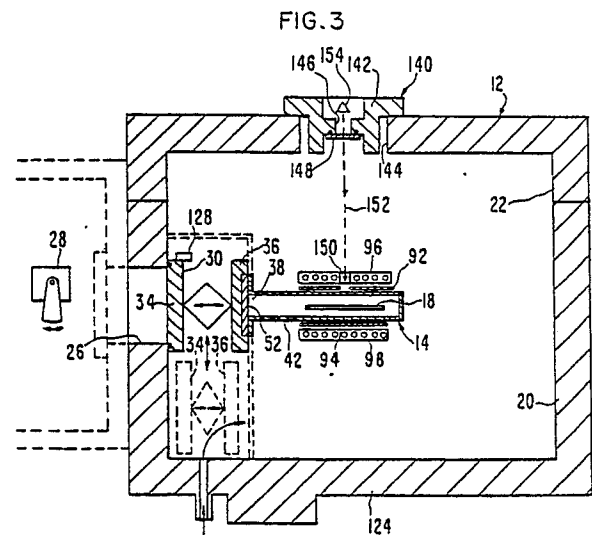
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54 **Apparatus and method for processing a semiconductor wafer.**

57 An apparatus and method for growing semiconductor quality oxide thermal layers on semiconductor wafers fast enough to be economically feasible as a single wafer process system. Process speed is insured by high pressure and high temperature. For example, if the pressure is about 100 atmospheres (1,500 psi) and at a temperature of 900° C, approximately 2.66 minutes are required to grow a 5,000Å oxide layer in a steam environment. The system can reach these operating conditions from ambient in approximately 30 seconds and depressurization and cool down require approximately 60 to 90 seconds. The apparatus includes a processing chamber to be pressurized with an oxidant, such as high pressure steam. The process chamber is contained in a pressure vessel adapted to be pressurized with an inert gas, such as nitrogen, to a high pressure. A pressure equalizing scheme is used to keep the fluid pressure of the process chamber and the pressure of the fluid pressure vessel substantially the same. The pressure equalization permits the use of thin walls for defining the process chamber.



EP 0 386 447 A3



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EUROPEAN SEARCH REPORT

Application Number

EP 90 10 1754

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
Y	EP-A-0 062 174 (IBM CORP.) * Page 1, lines 1-4; page 2, lines 19-29; page 4, lines 1-10,14-23 *	1-3,11-13,21,23,24,27	C 30 B 33/00 C 30 B 29/06
Y	--- US-A-4 546 726 (NAGASAKI) * Figure 2; column 2, lines 3-49 *	1-3,11-13,21,23,24,27	
Y	--- US-A-4 154 192 (TSUBOUCHI et al.) * Claims 1,2 *	1-3,11-13,21,23,24,27	
A	--- EP-A-0 182 681 (BUEVOZ)		
A,D	--- US-A-4 315 479 (TOOLE et al.) * Claims 1-3 *	1,23	
A	--- FR-A-2 382 931 (ATOMEL CORP.) & US-A-4 167 915 (Cat. D)		TECHNICAL FIELDS SEARCHED (Int. Cl.5)
A	--- US-A-4 253 417 (VALENTIJN) * Claim 1 *	1	C 30 B C 23 C H 01 L
A	--- US-A-4 018 184 (NAGASAWA et al.) -----		
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 23-05-1990	Examiner COOK S.D.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			



CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claims:
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

☒ LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims 1-22: Apparatus for processing (oxidizing) semiconducting wafer.

Claims 23-33: Method for processing (oxidizing) semiconducting wafer.
2. Claims 34,35: Power device per se.

- ☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☒ None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims,
namely claims: 1-22, 23-33